# Space Science Seminar
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# 10:30 a.m.
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## Wave Heating of the Solar Corona

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One of the major theories to explain the heating of the solar corona is that waves carry the required energy from lower layers of the solar atmosphere into the corona where the waves dissipate, thereby heating the plasma. Recent observations have demonstrated that waves are ubiquitous in the corona. A challenge for wave-driven heating models has been to determine if the waves are damped. In order to address this question, we analyzed observations from the Extreme Ultraviolet Imaging Spectrometer (EIS) on Hinode. In particular, we studied the non-thermal line width, which is proportional to the amplitude of transverse Alfvenic waves. Our results suggest that Alfvenic waves both carry and dissipate enough energy to heat coronal holes as well as quiet Sun regions. However, many open questions remain. One issue is that accurately quantifying the energy carried by the waves depends on the density, the density structuring of the corona, and the particular wave mode. Recently, we have carried out an observational study to quantify the density structuring. I will also describe upcoming laboratory atomic physics experiments whose goal is to improve the precision of spectroscopic density diagnostics. Another open question is to understand the basic physics of the dissipation and I will describe laboratory plasma experiments that we are carrying out which will explore the damping mechanism in detail.

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